

AN OBSERVATION ON THE BREEDING HABITS OF
CHLORION HARRISI IN TEXAS
(HYMENOPTERA).

BY GEORGE P. ENGELHARDT, Brooklyn Museum, Brooklyn, N. Y.

On a ramble over the grounds of the Texas Agricultural Research Laboratory near San Antonio, where I spent a week with my friend, H. B. Parks, in charge of the Station, early in April 1928, my attention was drawn to a growth of dead and wilted yuccas of a branching variety about which hundreds of dark colored wasps were circling and swarming. As far as the needle pointed stiff leaves permitted, I endeavored to examine the interior dense portions of the plant without finding anything indicative of so unusual a gathering. Then, standing off at a distance, I observed several of the wasps, carrying a loose dangling substance and entering the long, narrow tubes formed by the folding of the leaves during the drying up process. These tubes throughout their length of fifteen to eighteen inches were filled with dry soft grasses, leaving however spaces or chambers in orderly arrangement, each containing three or four nymphs in the second instar of one of the large, spiny Texan katydid. In the lower chambers a young wasp larva already was feasting on the stored food, while in the upper chambers was found a small oblong white egg attached to one of the nymphs. A sweep of the net through the swarming wasps resulted in the capture of a dozen or more examples. These, submitted to Dr. H. T. Fernald, Chief of the Department of Entomology, Massachusetts Agricultural College, have been determined as *Chlorion harrisi* Fernald, all males, as the writer neglected at the time to go after the more secretive and business bent females.

The stored nymphs of the spiny katydid, at once suggested a species of which several adults were collected on a previous visit to San Antonio in late May 1927. It is *Rehnia spinosa* Caudell, identified by A. N. Caudell from the type and one additional specimen in the U. S. National Museum collection. This fine katydid, sparsely if at all represented in most museum collections, measures three to four inches in length, has abbreviated flightless wings and powerful jumping legs heavily armed with spines. It is found in colors varying from green to brown. When taken in hand its mandibles are sufficiently strong to draw blood.

Locally not uncommon, its preferred haunts among cacti, yuccas and other spiny plants render capture difficult. Its large, usually food-laden abdomen in collected specimens is subject to rapid, offensive decay and discoloration. First class cabinet specimens require immediate cleaning and substitution of the abdominal contents.

Of the forty or fifty brood cells of *Chlorion* examined in the yucca leaf tubes, everyone proved to be stored exclusively with the nymphs of *Rehnia spinosa*. Thus the aggregate number of nymphs carried to the wasp colony must have amounted to several thousand at least. The effect of this persistent raid upon the local population of spiny katydids has not been determined. Mr. Parks reported during the summer that he failed to find adults in their usual habitat, but his duties in other directions very likely did not permit a thorough investigation. Several other yucca plants in a condition equally favorable for breeding and within a radius of five miles from the apicultural station had not been utilized by the wasps. No other colony came under observation.

This preference for specific kinds of prey by predacious wasps has been established for a number of species. Experienced entomologists sometimes find it of advantage to let the wasp hunters do their collecting by relieving them of their captures when brought in to the breeding grounds.

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Since submittal of the above note for publication additional observations on the behavior of *Chlorion harrisi* in Texas have been received from Mr. H. B. Parks as follows:

"Observations on the relationships which exist between plants and insects are always of interest. The spring of 1928 I was enabled to observe the nesting activities of *Chlorion harrisi* through a period of over three months. On the 10th of April the gardener of the Texas Agricultural Research Laboratory reported a swarm of little black bees in a 'Palma.' Investigation showed that the bees were the wasps mentioned above. Palma is the Mexican name for the Spanish Dagger (*Yucca treculeana* Carr). The dagger-like leaves of this plant serve as leaves for about two years. At this time they lose their green color and roll up so that they form a tube ranging in length from twelve to twenty-four inches. These hard dry leaves with the thorns at the end hang straight down, making a perfect protection for

the plant. Incidentally this also affords a nesting place for the curved billed thrush. Every one of the tube-like leaves is a home for a wasp. Three or four females seemed to work in a single leaf. They begin nesting operations by making a plug of dead grass blades in the lower end of a tube, then several nymph grasshoppers, spiders or other insects are placed on the grass bed. An egg is placed on one of the torpid insects. A plug of dead grass is put in and another lot of insects placed until the leaf was filled. During the time when the observations were made the same leaf was the home of three generations of wasps. It was a very peculiar sight to see hundreds of these wasps each carrying a dry grass blade hovering about the Spanish Dagger plant. These wasps were very selective as to the insects with which they provisioned their nests. What one brought in all brought in. However, the species changed several times during the period. They started out with grasshopper nymphs, changed to spiders, then to grasshoppers of a different species and when the hot weather of July put an end to their work they were using the nymphs of a green cricket. The Spanish Dagger is a very common plant in the semiarid part of Texas and every plant visited this summer had its colony of wasps."

Capture of Dragonflies by Larvae of Cicindelidae—While walking across a stretch of bare ground on August 12, I saw a dragonfly held captive by something that held it from below. I got down on my knees and took hold of one of its wings and raised it carefully. It was firmly held by a cicindelid larva. Afterward, I came across several more. One dragonfly was drawn almost completely into the burrow with only its head sticking out, because it was too large to enter the opening. These cicindelid larvae have tremendous strength for their size. I tried to find out just how the larvae caught their prey, but was not lucky enough to see one in the act of making a capture.—JOHN D. RITCHIE, Earl Grey, Sask.